

Claims

We claim:

1. A method for controlling a temperature of an emission control device receiving exhaust gases from an engine, the emission control device being coupled adjacent and downstream of an oxidation catalyst,

5 said method comprising:

adding a reductant to said exhaust gases; and

controlling a mixture of said exhaust gases and said reductant flowing into said oxidation catalyst to control a temperature of said emission control

10 device.

2. The method of claim 1 wherein said temperature is controlled while said mixture is rich of stoichiometry and NO_x is being removed from said

15 emission control device.

3. The method of claim 1 wherein said temperature is controlled while said mixture is rich of stoichiometry and SO_x is being removed from said

20 emission control device.

4. The method of claim 1 wherein said temperature is controlled while said mixture is lean of stoichiometry and said emission control device is

25 oxidizing particulate matter.

5. The method of claim 1 further including indicating when NO_x needs to be removed from said emission control device.

6. The method of claim 1 further including indicating when SO_x needs to be removed from said emission control device.

5 7. The method of claim 1 further including indicating when particulate matter needs to be removed from said emission control device.

10 8. The method of claim 1 wherein said step of controlling said mixture of said exhaust gases and said reductant further includes:

determining an exhaust flow rate of said exhaust gases from said engine;

15 determining an oxygen concentration in said exhaust gases; and

determining said amount of reductant to inject into said exhaust gases based on said exhaust flow rate and said oxygen concentration.

20 9. The method of claim 1 wherein said step of controlling said mixture of said exhaust gases and said reductant further includes:

determining an exhaust flow rate of exhaust gases from said engine; and

25 throttling said exhaust gases flowing into said oxidation catalyst based on said exhaust flow rate.

10. A method for controlling a temperature of an emission control device receiving exhaust gases from an engine, the emission control device being coupled proximate and downstream of an oxidation catalyst,

5 said method comprising:

indicating when one of NO_x and SO_x needs to be removed from said emission control device;

10 adding fuel to said exhaust gases; and

controlling a mixture of said exhaust gases and

15 said fuel flowing into said oxidation catalyst to control a temperature of said device when removing said indicated one of NO_x and SO_x from said device.

11. A system for controlling a temperature of an emission control device receiving exhaust gases from an engine, the device being coupled adjacent and downstream of an oxidation catalyst, said system comprising:

20 a reductant valve selectively supplying reductant to said exhaust gases responsive to a first signal;

25 a throttle valve controlling flow of said exhaust gases to said oxidation catalyst responsive to a second signal; and

30 a controller operably connected to said reductant valve and said throttle valve, said controller generating said first and second signals to control a mixture of said exhaust gases and said reductant flowing into said oxidation catalyst to control a temperature of said emission control device.

12. The system of claim 11 wherein said emission control device comprises a NOx trap.

13. The system of claim 11 wherein said emission control device comprises a combined NOx trap-particulate filter.

14. The system of claim 11 further including a temperature sensor generating a third signal indicative of a temperature in said oxidation catalyst, said third signal being received by said controller.

15. An article of manufacture, comprising:
15 a computer storage medium having a computer program encoded therein for controlling a temperature of an emission control device receiving exhaust gases from an engine, the device being coupled adjacent and downstream of an oxidation catalyst, the computer storage medium comprising:
20 code for adding a reductant to said exhaust gases; and
code for controlling a mixture of said exhaust gases and said reductant flowing into said oxidation catalyst to control a temperature of said emission control device.

16. The article of manufacture of claim 15 wherein said temperature is controlled while said mixture is 30 rich of stoichiometry and NOx is being removed from said emission control device.

17. The article of manufacture of claim 15 wherein said temperature is controlled while said mixture is rich of stoichiometry and SO_x is being removed from said emission control device.

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18. The article of manufacture of claim 15 wherein said temperature is controlled while said mixture is lean of stoichiometry and said emission control device is oxidizing stored particulate matter.

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